

1  
SEQUENCE LISTING

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 SRINIVASAN, SUBHA

<120> NOVEL FIBROBLAST GROWTH FACTORS

<130> BERLX 87

<140> 10/005,646  
 <141> 2001-12-07

<150> 60/251,837  
 <151> 2000-12-08

<160> 16

<170> PatentIn Ver. 2.1

<210> 1  
 <211> 636  
 <212> DNA  
 <213> Unknown Organism

<220>  
 <221> CDS  
 <222> (1)..(633)

<220>  
 <223> Description of Unknown Organism: PGF-21 nucleotide sequence

<400> 1  
 atg gct ccc tta gcc gaa gtc ggg ggc ttt ctg ggc ggc ctg gag ggc  
 Met Ala Pro Leu Ala Glu Val Gly Gly Phe Leu Gly Gly Leu Glu Gly  
 1 5 10 15  
 ttg ggc cag cag gtg ggt tcg cat ttc ctg ttg cct cct gcc ggg gag  
 Leu Gly Gln Gln Val Gly Ser His Phe Leu Leu Pro Pro Ala Gly Glu  
 20 25 30  
 96

egg ccc ccc ctg ctc ggc gag cgc agg aac ggc ggc gag cgg aac ggc  
 Arg Pro Pro Leu Leu Gly Glu Arg Arg Ser Ala Ala Glu Arg Ser Ala  
 35 40 45  
 144

cgc ggc ggg ccc ggg gct ggc gag cag ctg ggc cac atc ctc  
 Arg Gly Pro Gly Ala Ala Gln Leu Ala His Leu His Gly Ile Leu  
 50 55 60  
 192

cgc cgc cgg cag ctc tat tgc cgc acc ggc ttc cac ctg cag atc ctg  
 Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Gln Ile Leu  
 65 70 75 80  
 240

ccc gag ggc agc gtg cag ggc acc egg cag gag cac aac ctc ttc ggt  
 Pro Asp Gly Ser Val Gln Gly Thr Arg Gln Asp His Ser Leu Phe Gly  
 85 90 95  
 288

atc ttg gaa ttc atc agt gtc gca stg gga ctg gtc agt att aga ggt Ile Leu Glu Phe Ile Ser Val Ala Val Gly Leu Val Ser Ile Arg Gly 100 105 110	336
gtg gac agt ggt ctc tat ctt gga atg aat gac aaa gga gaa ctc tat Val Asp Ser Gly Leu Tyr Leu Ser Gly Met Asn Asp Lys Gly Glu Leu Tyr 115 120 125	384
gga tca gag aaa ctt act tcc gaa tgc atc ttt agg gag cag ttt gaa Gly Ser Glu Lys Leu Thr Ser Glu Cys Ile Phe Arg Glu Gln Phe Glu 130 135 140	432
gag aac tgg tat aac act tat tca ttt aac ata tat aaa cat ggg gac Glu Asn Trp Tyr Asn Thr Tyr Ser Ser Asn Ile Tyr Lys His Gly Asp 145 150 155 160	480
act ggc cgc agg tat ttt gtg gca ctt aac aaa gac gga act cca aga Thr Gly Arg Arg Tyr Phe Val Ala Leu Asn Lys Asp Gly Thr Pro Arg 165 170 175	528
gat ggc gcc agg tcc aag agg cat cag aaa ttt aca cat ttc tta cct Asp Gly Ala Arg Ser Lys Arg His Gln Lys Phe Thr His Phe Leu Pro 180 185 190	576
aga cca gtc gat cca gaa aga gtt cca gaa ttg tac aag gac cta ctg Arg Pro Val Asp Pro Glu Arg Val Pro Glu Leu Tyr Lys Asp Leu Leu 195 200 205	624
atg tac act tga Met Tyr Thr 210	636

<210> 2  
<211> 211  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: FGF-21 amino acid sequence

<400> 2 Met Ala Pro Leu Ala Glu Val Gly Gly Phe Leu Gly Gly Leu Glu Gly 1 5 10 15
Leu Gly Gln Gln Val Gly Ser His Phe Leu Leu Pro Pro Ala Gly Glu 20 25 30
Arg Pro Pro Leu Leu Gly Glu Arg Arg Ser Ala Ala Glu Arg Ser Ala 35 40 45
Arg Gly Gly Pro Gly Ala Ala Gln Leu Ala His Leu His Gly Ile Leu 50 55 60
Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Gln Ile Leu 65 70 75 80

3

Pro Asp Gly Ser Val Gln Gly Thr Arg Gln Asp His Ser Leu Phe Gly  
 85 90 95  
 Ile Leu Glu Phe Ile Ser Val Ala Val Gly Leu Val Ser Ile Arg Gly  
 100 105 110  
 Val Asp Ser Gly Leu Tyr Leu Gly Met Asn Asp Lys Gly Glu Leu Tyr  
 115 120 125  
 Gly Ser Glu Lys Leu Thr Ser Glu Cys Ile Phe Arg Glu Gln Phe Glu  
 130 135 140  
 GLU Asn Trp Tyr Asn Thr Tyr Ser Ser Asn Ile Tyr Lys His Gly Asp  
 145 150 155 160  
 Thr Gly Arg Arg Tyr Phe Val Ala Leu Asn Lys Asp Gly Thr Pro Arg  
 165 170 175  
 Asp Gly Ala Arg Ser Lys Arg His Gln Lys Phe Thr His Phe Leu Pro  
 180 185 190  
 Arg Pro Val Asp Pro Glu Arg Val Pro Glu Leu Tyr Lys Asp Leu Leu  
 195 200 205  
 Met Tyr Thr  
 210

<210> 3  
 <211> 513  
 <212> DNA  
 <213> Unknown Organism

<220>  
 <221> CDS  
 <222> (1)..(510)

<220>  
 <223> Description of Unknown Organism: FGF-23 nucleotide  
 sequence

<400> 3  
 atg cgc cgc cgc ctg tgg ctg ggc ctg gcc tgg ctg ctg ctg ggc cgg  
 Met Arg Arg Arg Leu Trp Leu Gly Leu Ala Trp Leu Leu Leu Ala Arg  
 1 5 10 15  
 ggc cgc gac ggc ggc gga acc cgg agc ggc tgg cgg egg gga cgg cgc agc  
 Ala Pro Asp Ala Ala Gly Thr Pro Ser Ala Ser Arg Gly Pro Arg Ser  
 20 25 30 96

tac cgg cac ctg gag ggc gac gtg cgc tgg cgg cgc ctc ttc tcc tcc  
 Tyr Pro His Leu Glu Gly Asp Val Arg Trp Arg Arg Leu Phe Ser Ser  
 35 40 45 144

4

act cac ttc ttc ctg cgc gtg gat ccc ggc ggc cgc gtg cag ggc acc	192
Thr His Phe Phe Leu Arg Val Asp Pro Gly Gly Arg Val Gln Gly Thr	
50 55 60	
cgc tgg cgc cac ggc cag gac agc atc ctg gag atc cgc tct gta cac	240
Arg Trp Arg His Gly Gln Asp Ser Ile Leu Glu Ile Arg Ser Val His	
65 70 75 80	
gtg ggc gtc gtg gtc atc aaa gca gtg tcc tca ggc ttc tac gtg gcc	288
Val Gly Val Val Val Ile Lys Ala Val Ser Ser Gly Phe Tyr Val Ala	
85 90 95	
atg aac cgc cgg ggc cgc ctc tac ggg tag cga ctc tac acc gtg gac	336
Met Asn Arg Arg Gly Arg Leu Tyr Gly Ser Arg Leu Tyr Thr Val Asp	
100 105 110	
tgc agg ttc cgg gag cgc atc qaa gag aac ggc cac aac acc tac gcc	384
Cys Arg Phe Arg Glu Arg Ile Glu Glu Asn Gly His Asn Thr Tyr Ala	
115 120 125	
tca cag cgc tgg cgc cgc ggc cag ccc atg ttc ctg ggc ctg gac	432
Ser Gln Arg Trp Arg Arg Gly Gln Pro Met Phe Leu Ala Leu Asp	
130 135 140	
agg agg ggg ggg ccc cgg cca ggc ggc cgg acg cgg cgg tac cac ctg	480
Arg Arg Gly Gly Pro Arg Pro Gly Gly Arg Thr Arg Arg Tyr His Leu	
145 150 155 160	
tcc gcc cac ttc ctg ccc gtc ctg gtc tcc tga	513
Ser Ala His Phe Leu Pro Val Leu Val Ser	
165 170	
<210> 4	
<211> 170	
<212> PRT	
<213> Unknown Organism	
<220>	
<223> Description of Unknown Organism: PGF-23 amino acid sequence	
<400> 4	
Met Arg Arg Arg Leu Trp Leu Gly Leu Ala Trp Leu Leu Leu Ala Arg	
1 5 10 15	
Ala Pro Asp Ala Ala Gly Thr Pro Ser Ala Ser Arg Gly Pro Arg Ser	
20 25 30	
Tyr Pro His Leu Glu Gly Asp Val Arg Trp Arg Arg Leu Phe Ser Ser	
35 40 45	
Thr His Phe Phe Leu Arg Val Asp Pro Gly Gly Arg Val Gln Gly Thr	
50 55 60	
Arg Trp Arg His Gly Gln Asp Ser Ile Leu Glu Ile Arg Ser Val His	
65 70 75 80	

5

Val Gly Val Val Val Ile Lys Ala Val Ser Ser Gly Phe Tyr Val Ala  
 85 90 95

Met Asn Arg Arg Gly Arg Leu Tyr Gly Ser Arg Leu Tyr Thr Val Asp  
 100 105 110

Cys Arg Phe Arg Glu Arg Ile Glu Glu Asn Gly His Asn Thr Tyr Ala  
 115 120 125

Ser Gln Arg Trp Arg Arg Gly Gln Pro Met Phe Leu Ala Leu Asp  
 130 135 140

Arg Arg Gly Gly Pro Arg Pro Gly Gly Arg Thr Arg Arg Tyr His Leu  
 145 150 155 160

Ser Ala His Phe Leu Pro Val Leu Val Ser  
 165 170

<210> 5  
 <211> 208  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: PGF-9 amino acid sequence

<400> 5  
 Met Ala Pro Leu Gly Glu Val. Gly Asn Tyr Phe Gly Val Gln Asp Ala  
 1 5 10 15

Val Pro Phe Gly Asn Val Pro Val Leu Pro Val Asp Ser Pro Val Leu  
 20 25 30

Leu Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly  
 35 40 45

Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg  
 50 55 60

Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly  
 65 70 75 80

Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu  
 85 90 95

Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser  
 100 105 110

Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu  
 115 120 125

Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp  
 130 135 140

6

Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg  
 145 150 155 160

Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr  
 165 170 175

Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val  
 180 185 190

Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser  
 195 200 205

<210> 6  
 <211> 207  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: FGF-16 amino acid  
 sequence

<400> 6  
 Met Ala Glu Val Gly Gly Val Phe Ala Ser Leu Asp Trp Asp Leu His  
 1 5 10 15

Gly Phe Ser Ser Ser Leu Gly Asn Val Pro Leu Ala Asp Ser Pro Gly  
 20 25 30

Phe Leu Asn Glu Arg Leu Gly Gln Ile Glu Gly Lys Leu Gln Arg Gly  
 35 40 45

Ser Pro Thr Asp Phe Ala His Leu Lys Gly Ile Leu Arg Arg Arg Gln  
 50 55 60

Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly Thr  
 65 70 75 80

Val His Gly Thr Arg His Asp His Ser Arg Phe Gly Ile Leu Glu Phe  
 85 90 95

Ile Ser Leu Ala Val Gly Leu Ile Ser Ile Arg Gly Val Asp Ser Gly  
 100 105 110

Leu Tyr Leu Gly Met Asn Glu Arg Gly Glu Leu Tyr Gly Ser Lys Lys  
 115 120 125

Leu Thr Arg Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp Tyr  
 130 135 140

Asn Thr Tyr Ala Ser Thr Leu Tyr Lys His Ser Asp Ser Glu Arg Gln  
 145 150 155 160

Tyr Tyr Val Ala Leu Asn Lys Asp Gly Ser Pro Arg Glu Gly Tyr Arg  
 165 170 175

Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val Asp  
 180 185 190

7

Pro Ser Lys Leu Pro Ser Met Ser Arg Asp Leu Phe His Tyr Arg  
195 200 205

<210> 7  
<211> 117  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: FGF-22

<220>  
<221> MOD\_RSS  
<222> (1)  
<223> Any amino acid

<400> 7  
Xaa Gly Met Leu Ala Ser Tyr Ser Val Ala Val Ala Met Val Thr Thr  
1 5 10 15

Arg Gly Val Ala Ser Arg Leu Tyr Leu Asp Ser Asn His Lys Gly Asp  
20 25 30

Leu Tyr Ala Ser Val Arg Leu Ala Gln Glu Ser Val Phe Trp Gly Gln  
35 40 45

Ser Glu Glu Asn Trp Ser Tyr Thr His Ser Ser Asn Leu Tyr Lys His  
50 55 60

Val Asp Thr Arg Arg Arg Tyr Tyr Val Pro Leu Asn Gln Gly Ala Thr  
65 70 75 80

Pro Ser Ala Gly Thr Arg Ser Leu Arg Arg Gln Asn Tyr Thr His Val  
85 90 95

Leu Pro Arg Pro Val Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp,  
100 105 110

Ile Leu Ser Gln Ser  
115

<210> 8  
<211> 208  
<212> PRT  
<213> Xenopus laevis

<400> 8  
Met Ala Pro Leu Ala Asp Val Gly Thr Phe Leu Gly Gly Tyr Asp Ala  
1 5 10 15

Leu Gly Gln Val Gly Ser His Phe Leu Leu Pro Pro Ala Lys Asp Ser  
20 25 30

Pro Leu Leu Phe Asn Asp Pro Leu Ala Gln Ser Glu Arg Leu Ser Arg  
35 40 45

Ser Ala Pro Ser Asp Leu Ser His Leu Gln Gly Ile Leu Arg Arg Arg  
50 55 60

Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Gln Ile Leu Pro Asp Gly  
65 70 75 80

Asn Val Gln Gly Thr Arg Gln Asp His Ser Arg Phe Gly Ile Leu Glu  
85 90 95

Phe Ile Ser Val Ala Ile Gly Leu Val Ser Ile Arg Gly Val Asp Thr  
100 105 110

Gly Leu Tyr Leu Gly Met Asn Asp Lys Gly Glu Leu Phe Gly Ser Glu  
115 120 125

Lys Leu Thr Ser Glu Cys Ile Phe Arg Glu Gln Phe Glu Glu Asn Trp  
130 135 140 145

Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Gly Asp Ser Gly Arg  
145 150 155 160

Arg Tyr Phe Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Asp Gly Thr  
165 170 175

Arg Ala Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val  
180 185 190

Asp Pro Glu Lys Val Pro Glu Leu Tyr Lys Asp Leu Met Gly Tyr Ser  
195 200 205

&lt;210&gt; 9

&lt;211&gt; 4

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Illustrative peptide

&lt;400&gt; 9

Leu Tyr Gly Ser

1

&lt;210&gt; 10

&lt;211&gt; 4

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Illustrative peptide

&lt;400&gt; 10

His Phe Leu Pro

1

<210> 11  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Illustrative peptide

<400> 11  
Val Gln Gly Thr Arg  
1 5

<210> 12  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Illustrative peptide

<400> 12  
Arg Ile Glu Glu Asn Gly His Asn Thr Tyr  
1 5 10

<210> 13  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Illustrative peptide

<400> 13  
Gln Phe Glu Glu Asn Trp Tyr Asn Thr Tyr  
1 5 10

<210> 14  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Illustrative peptide

<400> 14  
Ala Gly Thr Pro Ser Ala  
1 5

10

<210> 15

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative  
peptide

<400> 15

Ala Ala Glu Arg Ser Ala

1

5

<210> 16

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 6X His tag

<400> 16

His His His His His His

1

5